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LOUISIANA STATE UNIVERSITY COMPUTER RESEARCH CENTER

Frequency Distributions
Single Column and Double Column
for I.B.M. 1620

Lew D. Harkins

Both programs allow the selection of from 1 - 5 card columns for control. The single column program allows the selection of from 1 to 80 card columns for frequency distributions, and the double column program allows the selection of from 1 to 40 pairs of columns for frequency distribution. Columns for control or frequencies may be taken from any place on the cards. The only restriction being that they shall not contain negative numbers. Unused columns on the data cards may be left blank or contain other information.

Parameter Cards

For the single column program one parameter card is required; for the double column program two parameter cards are required. These cards designate which columns on the data cards are to be used for control and which are to be used for frequency distributions.

Parameter Card - Single Column

Columns on data cards which are to be used for control shall have the corresponding columns on the parameter card punched, $\overline{1}$ (minus 1).

Columns on data cards which are to be used for frequency distributions shall have the corresponding columns on the parameter card punched, 1 (one).

Columns on data cards which are not to be used shall have the corresponding columns on the parameter card left blank.

Parameter Cards - Double Column

All fields on both parameter cards are two digit fields and the high order position of each field must be flagged (x-punched).

Parameter Cards 2 & 3

These two parameter cards specify the location of the variables on the input data cards. The terms "high order position" and "low order position" refer to column number on the data cards, without regard to card number, as the number of variables to be taken from each card is determined by parameter card 1.

Parameter Card 2		Parameter Card 3	
Col. 1- 2	High order position of var. 1	Low order position of var. 1	
Col. 3- 4	" " " " " 2	" " " " " 2	
Col. 5- 6	" " " " " 3	" " " " " 3	
.	.	.	.
.	.	.	.
.	.	.	.
Col. 75-76	High order position of var. 38	Low order position of var. 38	
Col. 77-78	" " " " " 39	" " " " " 39	
Col. 79-80	" " " " " 40	" " " " " 40	

Note: Digit located at core storage position 401 determines course of action in case of characteristic overflow or underflow, (see 1620 SPS Subroutines), and may be changed after the program is loaded. Error codes are those of the SPS subroutines.

Output

Output is under control of program Switch 1. With Switch #1 on, all output is punched on cards. With Switch #1 off, all output is by typewriter.

Switches #2, #3 and #4 are not used.

REMARKS:

Corrected as used here means corrected for the mean

$$\Sigma x - \frac{(\Sigma x)^2}{n} \quad ; \quad \Sigma xy - \frac{\Sigma x \Sigma y}{n}$$

The following calculations are used to arrive at the means, standard deviations, and correlation coefficients:

$$\bar{x} = \frac{\Sigma x}{n} \quad ; \quad s_x = \sqrt{\frac{\Sigma x^2 - \frac{(\Sigma x)^2}{n}}{n-1}} \quad ; \quad r_{xy} = \frac{\Sigma xy - \frac{\Sigma x \Sigma y}{n}}{\sqrt{\left(\Sigma x^2 - \frac{(\Sigma x)^2}{n}\right)\left(\Sigma y^2 - \frac{(\Sigma y)^2}{n}\right)}}$$

Floating point notation used is as follows:

5018640000 = .1864, 5113700000 = 1.37, 4910000000 = .01, etc.

Operating Instructions

1. Clear memory.

    a. Set all check switches to program.
    b. Depress Instant Stop (SCE), Reset, Insert
    c. Type: 26 00003 00009
    d. Depress Release, Start
    e. Allow 2 seconds, then depress Instant Stop (SCE)
    f. Set all check switches to stop.

2. Load Program.

    a. Depress Reset (on console)
    b. Place program deck in read hopper
    c. Depress Load Key on 1622 unit
    d. To process last card, depress Reader Start Key.

3. After program is loaded, the halt code (43) will appear in the operation register. Depress Reset, Start. (Reset Key must be depressed before the Start Key as the program interrogates the last card indicator.)

4. If typewriter output is to be given, all tab stops should be cleared from the typewriter, and only margins set.

5. Program switches should be set according to the program specifications.

The program is now ready to accept parameter cards and data cards.

The program is self-initializing between problems and need not be reloaded or restarted to process subsequent problems; however, the last data card in each set must be processed before the next set is placed in the read hopper (due to use of last card indicator).

SAMPLE DATA
FOR SINGLE AND DOUBLE COLUMN FREQUENCY DISTRIBUTION

```
0578964123
0897523461
0976543215
0036985214
0852369147
0852369147
0963582741
0963582741
1963025874
1963025847
1789321456
1024753689
1986357420
1234578962
1987536420
1598637423
1896578965
```

CARD OUTPUT SINGLE COLUMN FREQUENCY
WITH NO CONTROL
FREQUENCIES AND PERCENTAGES

COL	0S	1S	2S	3S	4S	5S	6S	7S	8S	9S
01	0008	0009	0000	0000	0000	0000	0000	0000	0000	0000
01	047.1	052.9	000.0	000.0	000.0	000.0	000.0	000.0	000.0	000.0
02	0002	0000	0001	0000	0000	0002	0000	0001	0004	0007
02	011.8	000.0	005.9	000.0	000.0	011.8	000.0	005.9	023.5	041.2
03	0000	0000	0001	0002	0000	0002	0004	0002	0003	0003
03	000.0	000.0	005.9	011.8	000.0	011.8	023.5	011.8	017.6	017.6
04	0000	0000	0002	0004	0002	0000	0004	0002	0002	0001
04	000.0	000.0	011.8	023.5	011.8	000.0	023.5	011.8	011.8	005.9
05	0002	0000	0000	0004	0000	0007	0001	0001	0000	0002
05	011.8	000.0	000.0	023.5	000.0	041.2	005.9	005.9	000.0	011.8
06	0000	0000	0004	0002	0001	0002	0003	0002	0003	0000
06	000.0	000.0	023.5	011.8	005.9	011.8	017.6	011.8	017.6	000.0
07	0000	0001	0002	0003	0001	0003	0001	0002	0002	0002
07	000.0	005.9	011.8	017.6	005.9	017.6	005.9	011.8	011.8	011.8
08	0000	0003	0002	0000	0005	0000	0001	0002	0002	0002
08	000.0	017.6	011.8	000.0	029.4	000.0	005.9	011.8	011.8	011.8
09	0000	0002	0004	0000	0005	0001	0003	0001	0001	0000
09	000.0	011.8	023.5	000.0	029.4	005.9	017.6	005.9	005.9	000.0
10	0002	0003	0001	0002	0002	0002	0001	0003	0000	0001
10	011.8	017.6	005.9	011.8	011.8	011.8	005.9	017.6	000.0	005.9
TOTAL	0017									

CARD OUTPUT SINGLE COLUMN FREQUENCY
WITH CONTROL
DATA SORTED ON COLUMN 1
FREQUENCIES AND PERCENTAGES

CONTROL GROUP COL 01=0

COL	0S	1S	2S	3S	4S	5S	6S	7S	8S	9S
02	0001	0000	0000	0000	0000	0001	0000	0000	0003	0003
02	012.5	000.0	000.0	000.0	000.0	012.5	000.0	000.0	037.5	037.5
03	0000	0000	0000	0001	0000	0002	0002	0002	0000	0001
03	000.0	000.0	000.0	012.5	000.0	025.0	025.0	025.0	000.0	012.5
04	0000	0000	0002	0002	0000	0000	0002	0001	0001	0000
04	000.0	000.0	025.0	025.0	000.0	000.0	025.0	012.5	012.5	000.0
05	0000	0000	0000	0002	0000	0004	0000	0000	0000	0002
05	000.0	000.0	000.0	025.0	000.0	050.0	000.0	000.0	000.0	025.0
06	0000	0000	0001	0000	0001	0000	0003	0000	0003	0000
06	000.0	000.0	012.5	000.0	012.5	000.0	037.5	000.0	037.5	000.0
07	0000	0000	0002	0002	0001	0001	0000	0000	0000	0002
07	000.0	000.0	025.0	025.0	012.5	012.5	000.0	000.0	000.0	025.0
08	0000	0003	0002	0000	0001	0000	0000	0002	0000	0000
08	000.0	037.5	025.0	000.0	012.5	000.0	000.0	025.0	000.0	000.0
09	0000	0002	0001	0000	0004	0000	0001	0000	0000	0000
09	000.0	025.0	012.5	000.0	050.0	000.0	012.5	000.0	000.0	000.0
10	0000	0003	0000	0001	0001	0001	0000	0002	0000	0000
10	000.0	037.5	000.0	012.5	012.5	012.5	000.0	025.0	000.0	000.0

TOTAL 0008

CONTROL GROUP COL 01=1

COL	0S	1S	2S	3S	4S	5S	6S	7S	8S	9S
02	0001	0000	0001	0000	0000	0001	0000	0001	0001	0004
02	011.1	000.0	011.1	000.0	000.0	011.1	000.0	011.1	011.1	044.4
03	0000	0000	0001	0001	0000	0000	0002	0000	0003	0002
03	000.0	000.0	011.1	011.1	000.0	000.0	022.2	000.0	033.3	022.2
04	0000	0000	0000	0002	0002	0000	0002	0001	0001	0001
04	000.0	000.0	000.0	022.2	022.2	000.0	022.2	011.1	011.1	011.1
05	0002	0000	0000	0002	0000	0003	0001	0001	0000	0000
05	022.2	000.0	000.0	022.2	000.0	033.3	011.1	011.1	000.0	000.0
06	0000	0000	0003	0002	0000	0002	0000	0002	0000	0000
06	000.0	000.0	033.3	022.2	000.0	022.2	000.0	022.2	000.0	000.0
07	0000	0001	0000	0001	0000	0002	0001	0002	0000	0000
07	000.0	011.1	000.0	011.1	000.0	022.2	011.1	022.2	022.2	000.0
08	0000	0000	0000	0000	0004	0000	0001	0000	0002	0002
08	000.0	000.0	000.0	000.0	044.4	000.0	011.1	000.0	022.2	022.2
09	0000	0000	0003	0000	0001	0001	0002	0001	0001	0000
09	000.0	000.0	033.3	000.0	011.1	011.1	022.2	011.1	011.1	000.0
10	0002	0000	0001	0001	0001	0001	0001	0001	0000	0001
10	022.2	000.0	011.1	011.1	011.1	011.1	011.1	011.1	000.0	011.1

TOTAL 0009

CARD OUTPUT DOUBLE COLUMN FREQUENCY
WITH NO CONTROL
FREQUENCIES AND PERCENTAGES

COL 01-02

RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT
00	0001	05	0001	08	0003	09	0003	10	0001	12	0001	15	0001	17	0001	18	0001
00	005.9	05	005.9	08	017.6	09	017.6	10	005.9	12	005.9	15	005.9	17	005.9	18	005.9
19	0004																
19	023.5																

COL 03-04

RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT
24	0001	34	0001	36	0001	52	0002	63	0004	76	0001	78	0001	86	0001	87	0001
24	005.9	34	005.9	36	005.9	52	011.8	63	023.5	76	005.9	78	005.9	86	005.9	87	005.9
89	0001	96	0001	97	0001	98	0001										
89	005.9	96	005.9	97	005.9	98	005.9										

COL 05-06

RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT
02	0002	32	0001	35	0001	36	0002	52	0001	53	0001	54	0001	57	0002	58	0002
02	011.8	32	005.9	35	005.9	36	011.8	52	005.9	53	005.9	54	005.9	57	011.8	58	011.8
63	0001	75	0001	96	0001	98	0001										
63	005.9	75	005.9	96	005.9	98	005.9										

COL 07-08

RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT
14	0001	27	0002	32	0001	34	0001	36	0001	41	0001	52	0001	58	0002	64	0001
14	005.9	27	011.8	32	005.9	34	005.9	36	005.9	41	005.9	52	005.9	58	011.8	64	005.9
74	0002	89	0002	91	0002												
74	011.8	89	011.8	91	011.8												

COL 09-10

RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT
14	0001	15	0001	20	0002	23	0002	41	0002	47	0003	56	0001	61	0001	62	0001
14	005.9	15	005.9	20	011.8	23	011.8	41	011.8	47	017.6	56	005.9	61	005.9	62	005.9
65	0001	74	0001	89	0001												
65	005.9	74	005.9	89	005.9												

TOTAL 0017

CARD OUTPUT DOUBLE COLUMN FREQUENCY
WITH CONTROL
DATA SORTED ON COLUMN 1
FREQUENCIES AND PERCENTAGES

CONTROL GROUP COL 01=0

COL 03-04

RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT
36	0001	52	0002	63	0002	76	0001	78	0001	97	0001						
36	012.5	52	025.0	63	025.0	76	012.5	78	012.5	97	012.5						

COL 05-06

RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT
36	0002	52	0001	54	0001	58	0002	96	0001	98	0001						
36	025.0	52	012.5	54	012.5	58	025.0	96	012.5	98	012.5						

COL 07-08

RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT
27	0002	32	0001	34	0001	41	0001	52	0001	91	0002						
27	025.0	32	012.5	34	012.5	41	012.5	52	012.5	91	025.0						

COL 09-10

RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT
14	0001	15	0001	23	0001	41	0002	47	0002	61	0001						
14	012.5	15	012.5	23	012.5	41	025.0	47	025.0	61	012.5						

TOTAL 0008

CONTROL GROUP COL 01=1

COL 03-04

RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT
24	0001	34	0001	63	0002	86	0001	87	0001	89	0001	96	0001	98	0001		
24	011.1	34	011.1	63	022.2	86	011.1	87	011.1	89	011.1	96	011.1	98	011.1		

COL 05-06

RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT
02	0002	32	0001	35	0001	53	0001	57	0002	63	0001	75	0001				
02	022.2	32	011.1	35	011.1	53	011.1	57	022.2	63	011.1	75	011.1				

COL 07-08

RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT	RC	N/PCT
14	0001	36	0001	58	0002	64	0001	74	0002	89	0002						
14	011.1	36	011.1	58	022.2	64	011.1	74	022.2	89	022.2						

COL 09-10

```
RC N/PCT RC N/PCT RC N/PCT RC N/PCT RC N/PCT RC N/PCT RC N/PCT RC N/PCT RC N/PCT RC N/PCT

20  0002 23  0001 47  0001 56  0001 62  0001 65  0001 74  0001 89  0001
20 022.2 23 011.1 47 011.1 56 011.1 62 011.1 65 011.1 74 011.1 89 011.1

TOTAL  0009
```

PARAMETER CARD FOR SINGLE COLUMN FREQUENCY WITH NO CONTROL

1111111111 PUNCHED IN COLUMNS 1 THRU 10

PARAMETER CARD FOR SINGLE COLUMN FREQUENCY WITH CONTROL

1111111111 PUNCHED IN COLUMNS 1 THRU 10

PARAMETER CARD FOR DOUBLE COLUMN FREQUENCY WITH NO CONTROL

05000000000000 PARAMETER CARD NO. 1 PUNCHED IN COLUMNS 1 THRU 14
0103050709 PARAMETER CARD NO. 2 PUNCHED IN COLUMNS 1 THRU 10

PARAMETER CARD FOR DOUBLE COLUMN FREQUENCY WITH CONTROL

04010000000000 PARAMETER CARD NO. 1 PUNCHED IN COLUMNS 1 THRU 14
03050709 PARAMETER CARD NO. 2 PUNCHED IN COLUMNS 1 THRU 8

Single Column
Oreg. Dist ②

```
1                DORG    1000Z                                  01000
2  INIT          RN      R1,500Z                                01000 36 19801 00500
3                TFM     *+30,A-1Z                              01012 16 01042 01755  FLAGS
4                AM      *+18,12Z                               01024 11 01042 00012  FLAGS
5                TFM     0,0,10Z                                01036 16 00000 00000  FLAGS
6                CM      *-6,A+59Z                              01048 14 01042 01815  FLAGS
7                BNI     *-36,1200Z                             01060 47 01024 01200
8                TFM     *+59,R1-1,10Z                          01072 16 01131 19800  FLAGS
9                TFM     IN2+6,A+11Z                            01084 16 01186 01767  FLAGS
10               TFM     IN2+42,BCZ                             01096 16 01222 03511  FLAGS
11               AM      *+23,1,10Z                             01108 11 01131 00001  FLAGS
12 IN1           BD      *+48,R1Z                               01120 43 01168 19801
13               CM      *-1,80,10Z                             01132 14 01131 00080  FLAGS
14               BI      IN3,1200Z                              01144 46 01252 01200
15               B       *-48Z                                  01156 49 01108 00000
16               BNF     *+48,IN1+11,11Z                        01168 44 01216 01131  FLAGS  IND ADD
17 IN2           TF      A+11,IN1+11Z                           01180 26 01767 01131
18               AM      *-6,12Z                                01192 11 01186 00012  FLAGS
19               B       IN1+12Z                                01204 49 01132 00000
20               TF      BC,IN1+11Z                             01216 26 03511 01131
21               AM      *-6,2Z                                 01228 11 01222 00002  FLAGS
22               B       IN1+12Z                                01240 49 01132 00000
23 IN3           CM      A+11,0,10Z                             01252 14 01767 00000  FLAGS
24               BI      NC,1200Z                               01264 46 01684 01200
25               TF      HEAD1+116,BIGB+64Z                     01276 26 03453 03241
26               TFM     *+90,HEAD1+64Z                         01288 16 01378 03401  FLAGS
27               TFM     *+30,HEAD1+40Z                         01300 16 01330 03377  FLAGS
28               TFM     *+23,A+11Z                             01312 16 01335 01767  FLAGS
29               TNF     0,0Z                                   01324 73 00000 00000
30               AM      *-1,12Z                                01336 11 01335 00012  FLAGS
31               CM      *-13,0,610Z                            01348 14 01335 00000  FLAGS  IND ADD
32               BI      *+60,1200Z                             01360 46 01420 01200
33               TF      0,HEAD1+46Z                            01372 26 00000 03383
34               AM      *-54,18Z                               01384 11 01330 00018  FLAGS
35               AM      *-18,18Z                               01396 11 01378 00018  FLAGS
36               B       *-84Z                                  01408 49 01324 00000
37 READ1         RN      R2,500Z                                01420 36 19901 00500
38               BTM     A,0,10Z                                01432 17 01756 00000  FLAGS
39               TF      ID2,ID1Z                               01444 26 03509 03504
40               WA      BIGB,400Z                              01456 39 03177 00400
41               TD      HEAD1+44,ID1-4Z                        01468 25 03381 03500
42               TD      HEAD1+62,ID1-3Z                        01480 25 03399 03501
43               TD      HEAD1+80,ID1-2Z                        01492 25 03417 03502
44               TD      HEAD1+98,ID1-1Z                        01504 25 03435 03503
45               TD      HEAD1+116,ID1Z                         01516 25 03453 03504
46               CF      HEAD1+44Z                              01528 33 03381 00000
47               WA      HEAD1,400Z                             01540 39 03337 00400
48               WA      BIGB,400Z                              01552 39 03177 00400
49               BTM     C,800,9Z                               01564 17 01840 00800  FLAGS
50               B       READ2+48Z                              01576 49 01636 00000
51 READ2         RN      R2,500Z                                01588 36 19901 00500
52               BTM     A,0,10Z                                01600 17 01756 00000  FLAGS
53               C       ID1,ID2Z                               01612 24 03504 03509
54               BNI     D,1200Z                                01624 47 02092 01200
55               BTM     B,SZ                                   01636 17 01924 03673  FLAGS
```

```
56          BNI   READ2,900Z                    01648 47 01588 00900
57          SF    DZ                            01660 32 02092 00000
58          B     DZ                            01672 49 02092 00000
59 NC       BTM   C,800,9Z                      01684 17 01840 00800  FLAGS
60          RN    R2,500Z                       01696 36 19901 00500
61          BTM   B,SZ                          01708 17 01924 03673  FLAGS
62          BNI   *-24,900Z                     01720 47 01696 00900
63          SF    DZ                            01732 32 02092 00000
64          B     DZ                            01744 49 02092 00000
65 A        TD    ID1-4,R2Z                     01756 25 03500 19901
66          TD    ID1-3,R2Z                     01768 25 03501 19901
67          TD    ID1-2,R2Z                     01780 25 03502 19901
68          TD    ID1-1,R2Z                     01792 25 03503 19901
69          TD    ID1,R2Z                       01804 25 03504 19901
70          SF    ID1-4,0,10Z                   01816 32 03500 00000  FLAGS
71          BB     Z                            01828 42 00000 00000
72 C        TFM   *+30,S-4Z                     01840 16 01870 03669  FLAGS
73          AM    *+18,4Z                       01852 11 01870 00004  FLAGS
74          TFM   0,0,8Z                        01864 16 00000 00000  FLAGS
75          SM    C-1,1,9Z                      01876 12 01839 00001  FLAGS
76          BNI   *-36,1200Z                    01888 47 01852 01200
77          TFM   N,0,8Z                        01900 16 03499 00000  FLAGS
78          BB     Z                            01912 42 00000 00000
79 B        TFM   *+35,BC-2Z                    01924 16 01959 03509  FLAGS
80          AM    *+23,2Z                       01936 11 01959 00002  FLAGS
81          CM    IN2+42,0Z                     01948 14 01222 00000  FLAGS
82          BI    *+108,1200Z                   01960 46 02068 01200
83          TF    *+23,*-13,11Z                 01972 26 01995 01959  FLAGS  IND ADD
84          TD    *+21,R2Z                      01984 25 02005 19901
85          MM    *+9,4,810Z                    01996 13 02005 00004  FLAGS
86          TF    *+30,B-1Z                     02008 26 02038 01923
87          A     *+18,99Z                      02020 21 02038 00099
88          AM    0,1,8Z                        02032 11 00000 00001  FLAGS
89          AM    B-1,40Z                       02044 11 01923 00040  FLAGS
90          B     *-120Z                        02056 49 01936 00000
91          AM    N,1,8Z                        02068 11 03499 00001  FLAGS
92          BB     Z                            02080 42 00000 00000
93 D        WA    P3,400Z                       02092 39 02857 00400
94          WA    BIGB,400Z                     02104 39 03177 00400
95          TFM   D1+11,BC-2Z                   02116 16 02187 03509  FLAGS
96          TFM   D2+11,S-4Z                    02128 16 02271 03669  FLAGS
97          TFM   D2+6,P1+2Z                    02140 16 02266 02539  FLAGS
98          TFM   D3+54,P2+2Z                   02152 16 02338 02699  FLAGS
99          AM    D1+11,2Z                      02164 11 02187 00002  FLAGS
100 D1      CM    IN2+42,0Z                     02176 14 01222 00000  FLAGS
101         BI    D4,1200Z                      02188 46 02464 01200
102         TNF   P1+2,D1+11,11Z                02200 73 02539 02187  FLAGS  IND ADD
103         TNF   P2+2,D1+11,11Z                02212 73 02699 02187  FLAGS  IND ADD
104         AM    D2+11,4Z                      02224 11 02271 00004  FLAGS
105         BNI   D3,100Z                       02236 47 02284 00100
106         AM    D2+6,14Z                      02248 11 02266 00014  FLAGS
107 D2      TNF   P1,0Z                         02260 73 02537 00000
108         BNI   WP1,200Z                      02272 47 02368 00200
109 D3      AM    *+54,10Z                      02284 11 02338 00010  FLAGS
110         LD    95,D2+11,11Z                  02296 28 00095 02271  FLAGS  IND ADD
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111          D      95,NZ                                                                       02308 29 00095 03499
112          AM     95,5Z                                                                       02320 11 00095 00005  FLAGS
113          TNF    0,93Z                                                                       02332 73 00000 00093
114          AM     *-6,4Z                                                                      02344 11 02338 00004  FLAGS
115          TD     *-18,94,6Z                                                                  02356 25 02338 00094  FLAGS   IND ADD
116 WP1      CM     D2+6,P1+142Z                                                                02368 14 02266 02679  FLAGS
117          BNI    *+36,1200Z                                                                  02380 47 02416 01200
118          WA     P1,400Z                                                                     02392 39 02537 00400
119          BNI    D1-36,200Z                                                                  02404 47 02140 00200
120          CM     D3+54,P2+142Z                                                               02416 14 02338 02839  FLAGS
121          BNI    D2-36,1200Z                                                                 02428 47 02224 01200
122          WA     P2,400Z                                                                     02440 39 02697 00400
123          B      D1-36Z                                                                      02452 49 02140 00000
124 D4       TNF    P4+20,NZ                                                                    [illegible] [illegible] 03037 03499
125          WA     P4,400Z                                                                     02476 39 03017 00400
126          WA     BIGB,400Z                                                                   02488 39 03177 00400
127          BNF    READ1+24,DZ                                                                 02500 44 01444 02092
128          CF     DZ                                                                          02512 33 02092 00000
129          B      INITZ                                                                       02524 49 01000 00000
130 P1       DAC    50,00    0000                                                      Z        02537    00050
131          DAC    30,0    0000    00                         Z                                02637    00030
132 P2       DAC    50,00   000.0   000.0   000.0   000.0   000.0   000.0   000.Z               02697    00050
133          DAC    30,0  000.0   000.0   000.0                Z                                02797    00030
134 P3       DAC    50,COL     0S       1S       2S       3S       4S       5S       6Z           02857    00050
135          DAC    30,S      7S       8S       9S         Z                                    02957    00030
136 P4       DAC    50,TOTAL                                                           Z        03017    00050
137          DAC    30,                                        Z                                03117    00030
138 BIGB     DAC    50,                                                                Z        03177    00050
139          DAC    30,                                        Z                                03277    00030
140 HEAD1    DAC    50,CONTROL GROUP                                                   Z        03337    00050
141          DAC    30,                                        Z                                03437    00030
142          DAC    9,COL 00=0  ,HEAD1+30Z                                                      03367    00009
143 N        DS     4Z                                                                          03499    00004
144 ID1      DS     5Z                                                                          03504    00005
145 ID2      DS     5Z                                                                          03509    00005
146 BC       DSB    2,80Z                                                                       03511    00002 00080
147 S        DSB    4,800Z                                                                      03673    00004 00800
148 R1       DAS    41,19801Z                                                                   19801    00041
149 R2       DAS    41,19901Z                                                                   19901    00041
150          DC     2,00,19900Z                                                                 19900    00002
151          DEND   INITZ                                                                       01000

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Double Column

Freq. Dist.

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    1           DORG    402Z                                00402
    2 INIT      RN      R1,500Z                             00402 36 03701 00500
    3           RN      R2,500Z                             00414 36 03801 00500
    4           CM      R1+3,0,10Z                          00426 14 03704 00000  FLAGS
    5           BI      NC,1200Z                            00438 46 00918 01200
    6           TF      A+11,R1+3Z                          00450 26 01001 03704
    7           TF      A+23,R1+5Z                          00462 26 01013 03706
    8           TF      A+35,R1+7Z                          00474 26 01025 03708
    9           TF      A+47,R1+9Z                          00486 26 01037 03710
   10           TF      A+59,R1+11Z                         00498 26 01049 03712
   11           TF      HEAD1+116,BIGB+64Z                  00510 26 03217 02195
   12           TFM     *+90,HEAD1+64Z                      00522 16 00612 03165  FLAGS
   13           TFM     *+30,HEAD1+40Z                      00534 16 00564 03141  FLAGS
   14           TFM     *+23,R1+3Z                          00546 16 00569 03704  FLAGS
   15           TNF     0,0Z                                00558 73 00000 00000
   16           AM      *-1,2Z                              00570 11 00569 00002  FLAGS
   17           CM      *-13,0,610Z                         00582 14 00569 00000  FLAGS  IND ADD
   18           BI      *+60,1200Z                          00594 46 00654 01200
   19           TF      0,HEAD1+46Z                         00606 26 00000 03147
   20           AM      *-54,18Z                            00618 11 00564 00018  FLAGS
   21           AM      *-18,18Z                            00630 11 00612 00018  FLAGS
   22           B       *-84Z                               00642 49 00558 00000
   23 READ1     RN      R3,500Z                             00654 36 03901 00500
   24           BTM     A,0,10Z                             00666 17 00990 00000  FLAGS
   25           TF      ID2,ID1Z                            00678 26 03099 03094
   26           WA      BIGB,400Z                           00690 39 02131 00400
   27           TD      HEAD1+44,ID1-4Z                     00702 25 03145 03090
   28           TD      HEAD1+62,ID1-3Z                     00714 25 03163 03091
   29           TD      HEAD1+80,ID1-2Z                     00726 25 03181 03092
   30           TD      HEAD1+98,ID1-1Z                     00738 25 03199 03093
   31           TD      HEAD1+116,ID1Z                      00750 25 03217 03094
   32           CF      HEAD1+44Z                           00762 33 03145 00000
   33           WA      HEAD1,400Z                          00774 39 03101 00400
   34           WA      BIGB,400Z                           00786 39 02131 00400
   35           BTM     C,0,8Z                              00798 17 01074 00000  FLAGS
   36           B       READ2+48Z                           00810 49 00870 00000
   37 READ2     RN      R3,500Z                             00822 36 03901 00500
   38           BTM     A,0,10Z                             00834 17 00990 00000  FLAGS
   39           C       ID1,ID2Z                            00846 24 03094 03099
   40           BNI     D,1200Z                             00858 47 01350 01200
   41           BTM     B,SZ                                00870 17 01170 04003  FLAGS
   42           BNI     READ2,900Z                          00882 47 00822 00900
   43           SF      DZ                                  00894 32 01350 00000
   44           B       DZ                                  00906 49 01350 00000
   45 NC        BTM     C,0,8Z                              00918 17 01074 00000  FLAGS
   46           RN      R3,500Z                             00930 36 03901 00500
   47           BTM     B,SZ                                00942 17 01170 04003  FLAGS
   48           BNI     *-24,900Z                           00954 47 00930 00900
   49           SF      DZ                                  00966 32 01350 00000
   50           B       DZ                                  00978 49 01350 00000
   51 A         TD      ID1-4,R3Z                           00990 25 03090 03901
   52           TD      ID1-3,R3Z                           01002 25 03091 03901
   53           TD      ID1-2,R3Z                           01014 25 03092 03901
   54           TD      ID1-1,R3Z                           01026 25 03093 03901
   55           TD      ID1,R3Z                             01038 25 03094 03901
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56          SF      ID1-4Z                          01050 32 03090 00000
57          BB        Z                             01062 42 00000 00000
58 C        TF      *-3,R1+1Z                       01074 26.01071 03702
59          TFM     *+30,S-4Z                       01086 16 01116 03999  FLAGS
60          AM      *+18,4Z                         01098 11 01116 00004  FLAGS
61          TFM     0,0,8Z                          01110 16 00000 00000  FLAGS
62          SM      C-1,1,8Z                        01122 12 01073 00001  FLAGS
63          BNI     *-36,1200Z                      01134 47 01098 01200
64          TFM     N,0,8Z                          01146 16 03263 00000  FLAGS
65          BB        Z                             01158 42 00000 00000
66 B        TF      *+141,R1+1Z                     01170 26 01311 03702
67          TFM     *+35,R2-1,10Z                   01182 16 01217 03800  FLAGS
68          AM      *+23,2,10Z                      01194 11 01217 00002  FLAGS
69          TF      *+18,R2+1Z                      01206 26 01224 03802
70          SF      R3Z                             01218 32 03901 00000
71          AM      *-6,1,10Z                       01230 11 01224 00001  FLAGS
72          MM      *-18,4,610Z                     01242 13 01224 00004  FLAGS  IND ADD
73          TF      *+30,B-1Z                       01254 26 01284 01169
74          A       *+18,99Z                        01266 21 01284 00099
75          AM      S,1,8Z                          01278 11 04003 00001  FLAGS
76          AM      B-1,400Z                        01290 11 01169 00400  FLAGS
77          SM      *+9,1,10Z                       01302 12 01311 00001  FLAGS
78          BNI     B+24,1200Z                      01314 47 01194 01200
79          AM      N,1,8Z                          01326 11 03263 00001  FLAGS
80          BB        Z                             01338 42 00000 00000
81 D        TFM     D1+11,R2-1Z                     01350 16 01469 03800  FLAGS
82          TFM     D2+6,S-4Z                       01362 16 01560 03999  FLAGS
83          TF      D5+69,R1+1Z                     01374 26 01947 03702
84          TFM     D2+78,P1-4Z                     01386 16 01632 02287  FLAGS
85          TFM     D3+42,P2-4Z                     01398 16 01716 02447  FLAGS
86          TF      P1+158,BIGB+158Z                01410 26 02449 02289
87          TF      P2+158,BIGB+158Z                01422 26 02609 02289
88          AM      D1+11,2Z                        01434 11 01469 00002  FLAGS
89          TFM     D-1,0,10Z                       01446 16 01349 00000  FLAGS
90 D1       TF      *+33,0Z                         01458 26 01491 00000
91          TNF     P3+10,*+21Z                     01470 73 02621 01491
92          AM      *+9,1,10Z                       01482 11 01491 00001  FLAGS
93          TNF     P3+16,*-3Z                      01494 73 02627 01491
94          WA      P3,400Z                         01506 39 02611 00400
95          WA      P5,400Z                         01518 39 02931 00400
96          WA      BIGB,400Z                       01530 39 02131 00400
97          AM      D2+6,4Z                         01542 11 01560 00004  FLAGS
98 D2       CM      0,0,8Z                          01554 14 00000 00000  FLAGS
99          BI      D4,1200Z                        01566 46 01830 01200
100         BNI     D3,100Z                         01578 47 01674 00100
101         CM      *+42,P1+158Z                    01590 14 01632 02449  FLAGS
102         BI      WP1,1200Z                       01602 46 02034 01200
103         AM      *+18,6Z                         01614 11 01632 00006  FLAGS
104         TNF     0,D-1Z                          01626 73 00000 01349
105         AM      *-6,12Z                         01638 11 01632 00012  FLAGS
106         TNF     *-18,D2+6,611Z                  01650 73 01632 01560  FLAGS  IND ADD
107         BNI     D4,200Z                         01662 47 01830 00200
108 D3      CM      *+42,P2+158Z                    01674 14 01716 02609  FLAGS
109         BI      WP2,1200Z                       01686 46 02082 01200
110         AM      *+18,6Z                         01698 11 01716 00006  FLAGS
```

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111          TNF   0,D-1Z                                                    01710 73 00000 01349
112          LD    95,D2+6,11Z                                               01722 28 00095 01560  FLAGS  IND ADD
113          D     95,NZ                                                     01734 29 00095 03263
114          AM    95,5Z                                                     01746 11 00095 00005  FLAGS
115          AM    D3+42,8Z                                                  01758 11 01716 00008  FLAGS
116          TNF   D3+42,93,6Z                                               01770 73 01716 00093  FLAGS  IND ADD
117          AM    D3+42,3Z                                                  01782 11 01716 00003  FLAGS
118          TFM   D3+42,37,69Z                                              01794 16 01716 00037  FLAGS  IND ADD
119          AM    D3+42,1Z                                                  01806 11 01716 00001  FLAGS
120          TD    D3+42,94,6Z                                               01818 25 01716 00094  FLAGS  IND ADD
121 D4       CM    D-1,99,10Z                                                01830 14 01349 00099  FLAGS
122          BI    D5,1200Z                                                  01842 46 01878 01200
123          AM    D-1,1,10Z                                                 01854 11 01349 00001  FLAGS
124          B     D2-12Z                                                    01866 49 01542 00000
125 D5       BNI   *+24,100Z                                                 01878 47 01902 00100
126          WA    P1,400Z                                                   01890 39 02291 00400
127          BNI   *+24,200Z                                                 01902 47 01926 00200
128          WA    P2,400Z                                                   01914 39 02451 00400
129          WA    BIGB,400Z                                                 01926 39 02131 00400
130          SM    *+9,1,10Z                                                 01938 12 01947 00001  FLAGS
131          BNI   D+36,1200Z                                                01950 47 01386 01200
132          TNF   P4+20,NZ                                                  01962 73 02791 03263
133          WA    P4,400Z                                                   01974 39 02771 00400
134          WA    BIGB,400Z                                                 01986 39 02131 00400
135          BNF   READ1+24,DZ                                               01998 44 00678 01350
136          CF    DZ                                                        02010 33 01350 00000
137          B     INITZ                                                     02022 49 00402 00000
138 WP1      WA    P1,400Z                                                   02034 39 02291 00400
139          TF    P1+158,BIGB+158Z                                          02046 26 02449 02289
140          TFM   D2+78,P1+2Z                                               02058 16 01632 02293  FLAGS
141          B     D2+72Z                                                    02070 49 01626 00000
142 WP2      WA    P2,400Z                                                   02082 39 02451 00400
143          TF    P2+158,BIGB+158Z                                          02094 26 02609 02289
144          TFM   D3+42,P2+2Z                                               02106.16 01716 02453  FLAGS
145          B     D3+36Z                                                    02118 49 01710 00000
146 BIGB     DAC   50,                                          Z            02131    00050
147          DAC   30,                                  Z                    02231    00030
148 P1       DAC   50,                                          Z            02291    00050
149          DAC   30,                                  Z                    02391    00030
150 P2       DAC   50,                                          Z            02451    00050
151          DAC   30,                                  Z                    02551    00030
152 P3       DAC   50,COL 00-00                                 Z            02611    00050
153          DAC   30,                                  Z                    02711    00030
154 P4       DAC   50,TOTAL  0000                               Z            02771    00050
155          DAC   30,                                  Z                    02871    00030
156 P5       DAC   50,RC N/PCT RC N/PCT RC N/PCT RC N/PCT RC N/PCT RC N/Z     02931    00050
157          DAC   30,PCT RC N/PCT RC N/PCT RC N/PCTZ                        03031    00030
158 ID1      DS    5Z                                                        03094    00005
159 ID2      DS    5Z                                                        03099    00005
160 HEAD1    DAC   50,CONTROL GROUP                             Z            03101    00050
161          DAC   30,                                  Z                    03201    00030
162          DAC   9,COL 00=0 ,HEAD1+30Z                                     03131    00009
163 N        DS    4Z                                                        03263    00004
164 R1       DAS   41,3701Z                                                  03701    00041
165 R2       DAS   41,3801Z                                                  03801    00041
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166 R3      DAS   41,3901Z                    03901   00041
167         DC    2,00,3900Z                  03900   00002
168         DC    2,00,3800Z                  03800   00002
169 S       DSB   4,4000,4003Z                04003   00004 04000
170         DEND  INITZ                       00402

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